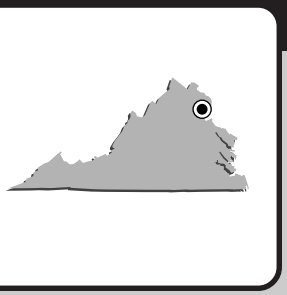
ARLINGTON HEADQUARTERS BATTALION
ARLINGTON, VIRGINIA



Engineering Field Division/Activity: EFACHES
Major Claimant: CMC
Size: 22 Acres
Funding to Date: $20,000
Estimated Funding to Complete: $0

Base Mission: Provides administrative, personnel and logistics support to active and retired Marine Corps personnel

Contaminants: PCBs

Number of Sites:

CERCLA:	1
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	1

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	0	Not Required:	1
Low:	0		

Sites Response Complete: 1

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	1							
RI / FS								
RD								
RAC								
RAO								
IRA	1(1)							
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

ARLINGTON SERVICE CENTER
ARLINGTON, VIRGINIA

Engineering Field Division/Activity: EFACHES
Major Claimant: CNO
Size: 23 Acres
Funding to Date: $1,321,000
Estimated Funding to Complete: $1,000,000

Base Mission: Provides DOD communications support
Contaminants: POLs

Number of Sites:

CERCLA:	0
RCRA Corrective Action:	0
RCRA UST:	3
Total Sites:	3

Relative Risk Ranking of Sites:

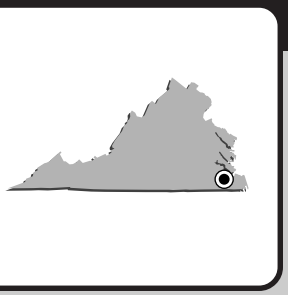
High:	1	Not Evaluated:	0
Medium:	0	Not Required:	2
Low:	0		

Sites Response Complete: 2

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	3							
CAP	2							
DES	1							
IMP		2						
IMO							1	
IRA								
RC	1	1					1	
Cumulative % RC	33%	67%	67%	67%	67%	67%	100%	100%

CHESAPEAKE NAVAL SECURITY GROUP ACTIVITY NORTHWEST
CHESAPEAKE, VIRGINIA



Engineering Field Division/Activity: LANTDIV
Major Claimant: COMNAVSECGRU
Size: 4,038 Acres
Funding to Date: $777,000
Estimated Funding to Complete: $2,783,000

Base Mission: Provides communications and intelligence support to the Atlantic Fleet
Contaminants: POLs

Number of Sites:

CERCLA:	0
RCRA Corrective Action:	0
RCRA UST:	4
Total Sites:	4

Relative Risk Ranking of Sites:

High:	1	Not Evaluated:	0
Medium:	0	Not Required:	3
Low:	0		

Sites Response Complete: 3

PROGRESS AND PLANS

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	4							
CAP	4							
DES	1							
IMP				1				
IMO								1
IRA								1(1)
RC	3							1
Cumulative % RC	75%	75%	75%	75%	75%	75%	75%	100%

Craney Island Fleet and Industrial Supply Center
Norfolk, Virginia

Engineering Field Division/Activity: LANTDIV
Major Claimant: COMNAVSUPSYSCOM
Size: 895 Acres
Funding to Date: $16,237,000
Estimated Funding to Complete: $10,932,000

Base Mission: Operates and maintains a primary fuel terminal; receives, stores and issues fuels

Contaminants: Heavy metals (cadmium, mercury), pesticides, POLs, phenols, volatile organic compounds

Number of Sites:

CERCLA:	13
RCRA Corrective Action:	0
RCRA UST:	5
Total Sites:	18

Relative Risk Ranking of Sites:

High:	6	Not Evaluated:	1
Medium:	2	Not Required:	9
Low:	0		

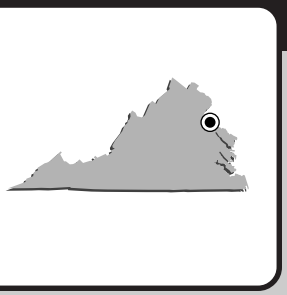
Sites Response Complete: 8

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	11							2
RI / FS	2	1				1		
RD	4		3					
RAC	1	1		1	3	1		1
RAO								
IRA	1(1)							
RC	5	1		1	3	1		2
Cumulative % RC	38%	46%	46%	54%	77%	85%	85%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	5							
CAP	5							
DES		2						
IMP	1		1	1				
IMO								3
IRA								2(2)
RC	2							3
Cumulative % RC	40%	40%	40%	40%	40%	40%	40%	100%

Dahlgren Naval Surface Warfare Center
Dahlgren, Virginia



Engineering Field Division/Activity: EFACHES

Major Claimant: COMNAVSEASYSCOM

Size: Main Site: 2,677 Acres; Explosive Experimental Area: 1,614

Funding to Date: $12,441,000

Estimated Funding to Complete: $34,688,000

Base Mission: Proofs and tests Department of the Navy ordnance

Contaminants: Cleaning solvents, explosive residues, heavy metals, low-level radioactive materials, mercury, PCBs, pesticides

Number of Sites:	
CERCLA:	65
RCRA Corrective Action:	1
RCRA UST:	0
Total Sites:	66

Relative Risk Ranking of Sites:			
High:	23	Not Evaluated:	0
Medium:	14	Not Required:	26
Low:	3		

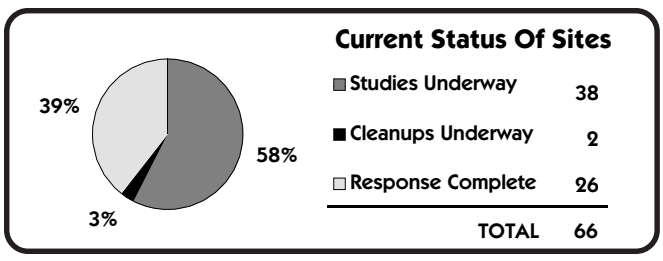
NPL

Sites Response Complete: 26

EXECUTIVE SUMMARY

Dahlgren Naval Surface Warfare Center (NSWC) is located in King George County, on the Virginia shore of the Potomac River, 28 miles east of Fredericksburg and 53 miles south of Washington, D.C. NSWC has carried out an extensive mission in the proof and testing of naval ordnance since 1918. Proof and testing have included work in the areas of guns of all sizes, aircraft bombs, rockets and projectiles. Limited work has been done with chemical and radiological warfare agents. A number of non-ordnance operations have been carried out, including metal plating, degreasing and metal treating, painting and carpentry, machining, metal trades, vehicle and locomotive maintenance, battery service, printing, electrical work, steam production, vehicle washing, water treatment, photography and pesticide mixing and application. Low level radiological operations conducted included atomic weaponry development, use of depleted uranium in 20 mm rounds, and use of thorium-magnesium in special weapons development. Current operations include pollution prevention technologies to prevent further contamination. The primary Areas of Concern (AOCs) that caused National Priorities List (NPL) placement are mercury contamination at Hideaway Pond (Site 10), oil containing the chemical additive PCB from Transformer Draining (Site 19), and pesticides at the Pesticide Rinse Area (Site 25). Dahlgren NSWC is under a Federal Facility Agreement (FFA) with the EPA Region III and the Commonwealth of Virginia, which was signed in September 1994.

NSWC is surrounded by low-density rural residential and agricultural areas. NSWC is bounded on the north by Route 301 and on the east by the Potomac River. The Mainside is separated from the Explosive Experimental Area (EEA) by Upper Machodoc Creek, which drains the EEA. Both Gambo and Williams Creeks collect the surface runoff from the Mainside. All waterways drain to the Potomac River. Approximately 40 percent of the Mainside is composed of residential/developed areas. The northern and western portions of the site contain large blocks of mature forest. Forests in the central and eastern areas tend to be younger, with large areas of pine plantations. Over 60 percent of the EEA is hardwood and pine forest, with only eight percent of the area residential/developed. There are numerous marshes in the EEA. Three freshwater water bodies also exist on-site. Approximately 326 acres are wetlands. There are large wildlife populations in the forested areas and the wetlands. The main potential contaminant migration pathway is via surface water runoff. The groundwater aquifer is very deep and protected by impermeable layers.



A Restoration Advisory Board (RAB) was started in FY95. A Community Relations Plan (CRP) was updated in October 1995 and receives periodic updates. In FY91, an Administrative Record and an Information Repository were established at local libraries.

There are 65 IR sites. Currently, 38 sites are in a study phase. Twenty-two sites are underway in Site Inspections (SIs), while sixteen sites have Remedial Investigations/Feasibility Studies (RI/FSs) ongoing. Designs and Remedial Actions are scheduled for 10 sites in FY97. The remaining sites are awaiting funding to complete the study phase. The Gambo Creek Ecological Assessment Phase II is underway and is expected to be completed in FY97. Three sites in the Site Screening Process, Sites 22, 51 and 53 were recommended for No Further Action. Response is complete at 26 sites.

Major successes in the cleanup program at NSWC include: removal of soil contaminated by the chemical additive PCB at Site 19; removal of petroleum contaminated soil at the Tar Tank Storage Area Solid Waste Management Unit (SWMU) #67; use of immunoassay field screening tests to reduce costs and obtain quick turnaround times. Desktop screening of Appendix B sites have enabled (4) No Further Actions, and initiated several removal actions from soil and groundwater sampling data.

Site Screening Process (SSP) investigations and Master Work Plan submittals were developed and initiated. These initiatives have helped streamline investigations, reduced work plan costs and shortened review times.

NSWC recently completed a pilot-scale Bioremediation Treatability study on a pesticide rinse site. The treatability study evaluated methods of bioremediating pesticide contaminated soils as part of an overall effort to look into innovative technologies that can save money and reduce risks to the environment.

DAHLGREN NSWC
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The major hydrological characteristic of NSWC is an artesian aquifer approximately 600 to 800 feet below the surface. In general, the impermeable nature of the surface geology minimizes potential downward migration of surface pollutants. Consequently, pollutant migration pathways are largely restricted to near surface migration and surface runoff. The site geology serves to minimize the possibility of contamination of the deep on-site aquifer that serves as a drinking water source for base residents and workers. Most of the Main Site falls into the Gambo Creek watershed. The remainder of the surface runoff drains into peripheral drainage swales which flow directly into Upper Machodoc Creek and eventually into the Potomac River. Surface runoff from the Explosive Experimental Area (EEA) will either drain into Black Marsh to the east or the Upper Machodoc Creek, which borders the west and northern sides. Three freshwater bodies exist on NSWC: Upper Gambo Creek, Hideaway Pond and the Cooling Pond. Approximately 326 acres of NSWC are wetlands.

The U.S. Geological Survey (USGS) has performed hydrogeologic and water quality studies on the Mainside and the EEA to better define the hydrology and the general water quality at the installation. The Fish and Wildlife Service has assisted Dahlgren in reviewing and providing technical guidance for the Gambo Creek Ecological Assessment. This guidance has focused our sampling efforts to better define the ecologically sensitive areas.

NATURAL RESOURCES - A large number of mammalian, avian and herpetofaunal species were observed or expected at NSWC. The only immediately evident area that may be potentially affected by contamination from waste disposal practices is the Hideaway Pond drainage area. Fish tissue samples indicate mercury levels exceeding EPA maximum contaminant limits. Investigations to identify the potential sources of mercury in Hideaway Pond have focused on Site 17, the 1400 Area Landfill. The Bald Eagle is the only known endangered species among the flora and fauna found at the activity.

RISK - A Baseline Risk Assessment, both ecological and human health, has been performed for Sites 2, 9, 10, 12, 17, 19, 25 and 29 using EPA guidance. The DOD's Relative Risk Ranking System was used to rank 59 sites. Twenty-three (23) sites resulted in "high" risk levels primarily due to known soil and groundwater contamination and identified migration pathways to nearby wetlands and ecological resources. The Agency for Toxic Substance and Disease Register (ATSDR) performed a Site Scoping visit on 10 December 1992. This report was received on 19 May 1994.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - In October 1992, NSWC was placed on the National Priorities List (NPL) with a Hazard Ranking System (HRS) score of 50.26. Three sites that drove the listing are: Hideaway Pond (Site 10), Transformer Draining Area (Site 19) and the Pesticide Rinse Area (Site 25) due to the potential migration of releases that could affect the Potomoc River, Gambo Creek, associated wetlands and local groundwater aquifers that are used for drinking water.

LEGAL AGREEMENTS - The Department of the Navy (DON), EPA and the Commonwealth of Virginia negotiated a Federal Facility Agreement (FFA) which was signed in September 1994. A Site Management Plan (SMP), which is updated annually, contains the investigation and cleanup schedules for sites included in the FFA.

PARTNERING - The installation holds frequent meetings and conference calls with the EPA Region III and the Virginia Department of Environmental Quality remedial project manager's as well as other regulatory agencies, as appropriate to communicate on particular issues of importance. A formal partnering session is scheduled for November 1996 to aid in communication and understanding between the regulators, contractors and the Navy. Partnering has been an important step to increase communication and understanding across the board.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was established in FY92. The TRC was converted to a Restoration Advisory Board (RAB) in October 1994. Currently, the RAB meets periodically to review project plans and progress of investigations and cleanup. As a result of these meetings, many suggestions from the community have been incorporated into the cleanup program. Community concerns and continual feedback are vital to the success of the IR program.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was established in August 1992 and updated again in October 1995.

INFORMATION REPOSITORY - An Administrative Record was established at the NSWC General Library and an Information Repository at the Smoot Memorial Library in FY91.

HISTORICAL PROGRESS

FY83

Sites 1-36 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), identified 36 potentially contaminated sites in May 1983 at NSWC. All but 12 of the sites were recommended for further study.

FY86

Sites 9, 10, 12, 17, 19 and 25 - The Confirmation Study (CS), equivalent to a Site Inspection (SI), was completed.
Site 37 - A new site, Lead Contaminated Sand from an old firing range, was identified by the activity.

FY92

Sites 2, 9, 10, 12, 17, 19, 25, 29 and 37 - The Remedial Investigation/ Feasibility Study (RI/FS) was awarded.
Site 34 - A removal action involving soil and concrete sampling, excavation and disposal was completed in May 1992. No further action is anticipated at this site.

FY93

SWMUs and AOCs - During the SI phase, a RCRA Facility Assessment (RFA) was completed in December 1992 by EPA and identified over 100 Solid Waste Management Units (SWMUs). The Department of the Navy (DON) and EPA did an initial screening and six Areas of Concern (AOCs) and 31 SWMUs were added to the Installation Restoration Program (IRP). An RFA was completed in December 1992. However, all the AOCs and SWMUs were incorporated into the FFA for action under CERCLA.

FY94

Sites 19, 38, 48, and SWMUs 10, 18, 68 and 85 - Removal actions were initiated at Sites 19 and 36. Interim Remedial Actions/Remedial Actions (IRAs/RAs) were completed in FY94 including: a Tar Tank Storage Area (Site 48) containing petroleum contaminated soil was removed. Welding slag was removed from the ground at SWMU 10. A cover was placed on SWMU 18 (Incinerator Ash Dumpster). A waste drum was removed from SWMU 68 and contractor materials and debris was removed from SWMU 85. NFA is anticipated at these sites.

DAHLGREN NSWC
HISTORICAL PROGRESS

FY95

Sites 36 and 39 - An Engineering Evaluation/Cost Analysis (EE/CA) and a joint venture with the U.S. Naval Academy to perform a treatability study on two Depleted Uranium sites (Sites 36 and 49) was initiated. These sites contained soils contaminated with depleted uranium.

Sites 6, 21, 22, 31, 32, 39, 45, 46, 48, 50, 51 and 53 - The SIs were initiated and have been completed.
Site 19 - A removal action was completed at the Transformer Draining Area. Soil was contaminated with the PCB's. Field Screening immunoassay tests were used to determine the extent of PCB contamination and reduce laboratory and mobilization costs.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 6, 21, 22, 31, 32, 45, 46, 50, 51 and 53 - SSP's were completed and recommended: (3) sites (22, 51, and 53) No Further Action (upon confirmatory sampling), (3) sites (19,39, and 60).
Sites 2, 9, 10, 12, 17, 19, 25, 29 and 58 - RI's are completed. FS's are expected to be completed by 2nd quarter FY97.
Sites 3 and 44 - RI's were initiated as part of RCRA Closure requirements.
Sites 13, 20, 23, 37, 54, 56 and 57 - SSP's were initiated. SSP's will be investigated under a "Desk-Top" screening process, planned in FY97 and FY98.

Gambo Creek Ecological Assessment was completed. A Phase II Workplan was initiated to address concerns and further delineate problem areas identified in Phase I.
FFA Appendix B sites Closed Out - SWMU 15, 70, AOC A and AOC O.
FS's for six sites (2, 9, 10, 12, 17, 25) were pushed into FY97 to accommodate additional sampling due to data gaps.
Sites 19, 39 and 60 - IRAs completed.
Sites 22, 39, 48, 51, 53 and 60 - Response Complete.
A Benchscale Bioremediation Treatability Study was performed on Site 25, indicating potential for biodegradation of the site. These results are currently being reviewed by the regulators.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 36 and 49 - DU contaminated soil Removal Actions planned.
Sites 2, 9, 10, 12, 17, 19, 25 and 29 - FSs and Remedial Designs are expected to be completed. 3rd quarter remedial actions are planned for award.
Site 25 - Benchscale Treatability Study for the Pesticide Rinse Area is planned for completion. Remedial Design and 3rd quarter remedial actions are planned.
Sites 3, 44 and 58 - RIs are planned for completion.
Sites 2, 9, 10, 12, 17, 25, 36 and 49 - These sites are expected to enter either the RI phase or a potential removal action in FY97, if warranted.

Appendix B sites - Perform sampling to continue screening sites and risk ranking, perform removal actions, where appropriate.

FY98

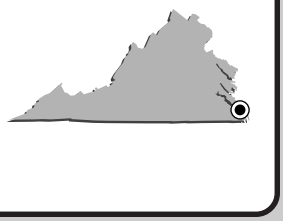
Sites 13, 20, 23, 37, 54, 55, 56 and 57 - SI's are planned.
Site 29 - Remedial Designs is planned.
Complete Phase II Gambo Creek Ecological Assessment.
Sites 2, 9, 10, 17 and 25 - Complete Remedial Actions.
Appendix B sites - Complete sampling for screening and risk ranking, perform removal actions, where appropriate.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	29	12	1	8				12
RI / FS			11		6		1	17
RD			8	1		2		26
RAC			2	5	1			31
RAO								5
IRA	7(7)	3(3)						
RC	19	6	3	5	1			31
Cumulative % RC	29%	38%	43%	51%	52%	52%	52%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	1							
RFI / CMS								
DES								
CMI								
CMO								
IRA								
RC	1							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

Dam Neck Fleet Combat Training Center Atlantic
Dam Neck, Virginia



Engineering Field Division/Activity: LANTDIV
Major Claimant: CNET
Size: 1,100 Acres
Funding to Date: $603,000
Estimated Funding to Complete: $213,000

Base Mission: Provides training in the operation, maintenance and employment of specified tactical combat direction and control systems typical to naval warfare; provides facilities, logistical maintenance and personnel support to tenant commands

Contaminants: Pesticides, heavy metals, POLs, paint, PCBs, solvents

Number of Sites:

CERCLA:	6
RCRA Corrective Action:	0
RCRA UST:	5
Total Sites:	11

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	1	Not Required:	10
Low:	0		

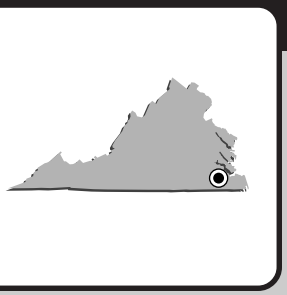
Sites Response Complete: 9

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	6							
RI / FS	2							
RD								
RAC								
RAO			2					
IRA								
RC	4		2					
Cumulative % RC	67%	67%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	5							
CAP	2							
DES								
IMP								
IMO								
IRA	1(1)							
RC	5							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

DRIVER NAVAL RADIO STATION
DRIVER, VIRGINIA



Engineering Field Division/Activity: LANTDIV
Major Claimant: COMNAVFACENGCOM
Size: 597 Acres
Funding to Date: $6,788,000
Estimated Funding to Complete: $111,000

Base Mission: Provides radio transmitting services for administrative, operational and command control of fleet units and other DoD agencies in the Atlantic and Caribbean; maintains communication links from the Arctic to the Antarctic, from the Gulf of Mexico to the Indian Ocean

Contaminants: Pesticides, solvents, PCBs, refuse, POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	11	High:	0	Not Evaluated:	0
RCRA Corrective Action:	0	Medium:	0	Not Required:	11
RCRA UST:	0	Low:	0		
Total Sites:	11				

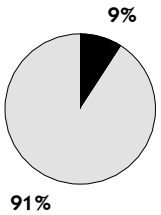
BRAC III

Sites Response Complete: 10

EXECUTIVE SUMMARY

The Driver Naval Radio Station (NRS) was established as an air station during World War II to train pilots. After the war it was converted to a radio transmitting facility. It is located in the Driver Community of the City of Suffolk, Virginia, thirteen miles from Portsmouth, Virginia. NRS was operationally closed in March 1994 after being recommended for complete closure by the Base Realignment and Closure (BRAC) Commission. The communications system consisted of antenna structures and one microwave tower. Past operations that contributed to contamination include painting, pest control, vehicle maintenance, transformer maintenance, boiler maintenance, and solid waste disposal. Site types where contamination was found include spill sites, landfills, a burn area, storage areas, disposal areas, and a gas station.

NRS is located in a low coastal plain area, surrounded by tidal streams, marshes, and swamps. The area is relatively flat with drainage on almost all sides to the Nansemond River or its tributaries. The area is bounded by the Nansemond River and its tributaries to the west and south, residential land to the north, and farmland to the east. The major potential contaminant migration pathways are surface water flow and groundwater movement. Most of the sites are near the perimeter of the activity, close to low lying areas occupied by intertidal salt marshes. Migration in these areas is facilitated by inundation of tidal events, flooding, and surface water runoff. Pollution migration may also occur through groundwater movement. The water table aquifer is 1-11 feet below the land surface. The relatively small distance to groundwater, combined with the moderate to moderately rapid permeability of soils is highly conducive to subsurface contaminant migration. Community and city water supply wells in the area are screened in the lower artesian aquifer. Both the Nansemond River and the James River are estuarine and support commercial fish and shellfish harvesting. The greatest concern to the local community is for the Navy to commit to and implement an environmental program that is protective of human health and the environment.



Current Status Of Sites

Studies Underway	0
Cleanups Underway	1
Response Complete	10
TOTAL	11

A Technical Review Committee (TRC) was formed in FY88 and was converted to a Restoration Advisory Board (RAB) in 1994. The Community Relations Plan was completed in FY92. An Administrative Record and an Information Repository were established in FY92.

The Installation Restoration Program at NRS is complete, with the exception of Site 1. Of the eleven sites identified, five were cleaned up and six were classified as no further action required. Site 5 was remediated for PCB contamination. Sites 1, 5, 7 and 10 are all under the long term monitoring program. Site 1 will be RC upon the completion of LTO (natural attenuation of groundwater contamination) efforts in FY01.

Three examples of Driver's success with respect to cost savings, minimizing delays, and time savings are expanded upon below:

a. An estimated 300K was saved because concerns about ecological risk at several sites bordering the Nansemond River Wetlands prompted development of a multi-site, Long Term, Ecological Monitoring Plan in lieu of additional pre-transfer ecological risk assessments or a Natural Resources Damage Assessment (LTEMP). Development of the LTEMP was possible due to the BCT Forum which allowed stakeholders to identify data needs, propose design strategies, and balance objectives with DON cost, time, and property transfer concerns.

b. An estimated 300K was saved because an agreement among BCT members to retain a number of sites and AOC's in the SI Phase, until pre-remedial risk assessment based removal actions were completed. This resulted in processing NFRAP decisions without the execution of an RI/FS.

c. An estimated amount between 750K and 1 million was saved due to the experience and background of the BCT members. A BCT review of the workplan for the Site 5 removal action resulted in a trade off of a sheet pile dike for a coffer dam dike which was also used for clean backfill to complete the removal action. Cost savings permitted the RPM to integrate the removal action and avoid programming additional funds for the study and design phase as well as time to complete the cleanup.

The Naval Facilities Engineering Command's Atlantic Division assumed caretaker responsibilities in October 1994. A BRAC Cleanup Team (BCT) was formed and a BRAC Cleanup Plan (BCP) written in 1994. Probable reuse will be recreational, with a small portion being light industrial and residential.

DRIVER NAVRADSTA
RELEVANT ISSUES

RELEVANT ISSUES: Uncertain reuse partitioning between the Department of Interior and the private sector impacted the risk assessments and final remedies.

ENVIRONMENTAL RISK: Shallow groundwater aquifers and surface/subsurface soils were of the most concern and had impacted the progress the most. Ecological risk concerns with sites bordering the Nansemond River and associated wetlands became a stumbling block until the BCT developed a multi-site Long Term Monitoring program to include ecological monitoring.

ENVIRONMENTAL RISK

HYDROGEOLOGY - Driver NRS is located entirely within the drainage area of the Nansemond River, a tributary of the James River. Significant tidal wetlands border the western and southern part of the facility. Surface water drains into ditches and streams which discharge to wetland areas along the Nansemond River and Oyster House Creek. Groundwater in Southeastern Virginia occurs in three major aquifer systems: the water-table aquifer, upper artesian aquifer, and lower artesian aquifer. Contaminants may migrate by means of surface runoff to creeks and rivers or by infiltration to the groundwater aquifers. The potential for groundwater contamination is enhanced by the presence of well drained soils in the area. Bottled water is used for drinking water. None of the water from any of the aquifers is used for drinking water. Untreated well water is not suitable for drinking, but is used for fire hydrants, restrooms, and air conditioners at NRS.

NATURAL RESOURCES - Prior to development, NRS was a salt marsh-upland. Salt marsh cordgrass covered significant tidal areas along the Nansemond River and bottom land forests were found on higher ground. Most of these forests were cleared by early farmers. The land was further cleared and graded when the Navy acquired it in 1941. Most of the land at NRS is maintained as grassland by mowing to prevent excessive growth from interfering with the maintenance and operation of radio transmitters and antenna. In 1972, 207 acres of undisturbed salt marsh along the Nansemond River and Oyster House Creek were excessed to the U.S. Department of the Interior and are now the Nansemond National Wildlife Refuge. No federal or state designated endangered plant species are supported on NRS. Several species of endangered sea turtles, the Green, the Hawkbill, the Leatherback, the Loggerhead, and the Atlantic Ridley, are know to feed in the Chesapeake Bay and may swim up the James River during summer. The southern bald eagle is on the federal endangered species list and is known to nest about two and a half miles from NRS. The red-cockaded woodpecker, also on the federal endangered species list, lives in mature pine strands in the Great Dismal Swamp, about two miles southeast of NRS Driver.

RISK - A Baseline Human Health Risk Assessment was conducted in conjunction with the Remedial Investigation/Feasibility Study (RI/FS) for Site 5 in 1992. Site 5 is a marshy area near Star Creek where five PCB transformers were disposed of (probably in the early 1970's). The PCB-containing transformers were removed in 1983. The potential for migration of the contaminant to surface water was high, as the site lies in an intertidal zone. The major exposure pathways are dermal contact and accidental ingestion of surface soils and sediments by base personnel. Humans may also be exposed to PCBs through ingesting polluted fish or shellfish. An Ecological Risk Assessment, also conducted during the RI/FS, found the overall health of fish captured during the survey to be normal, based on external examination. Sediment contamination and possibly limited surface water contamination, again with PCBs, may be causing chronic physiological stresses to resident organisms in the marsh areas and channel of No-Name Creek.

RESTORATION PROJECTS - At Site 5, 2,200 cubic yards of PCB contaminated soil were removed and disposed of in an EPA-approved TSCA landfill. The wetlands were restored to its natural state upon the completion of the remediation. The wetland restoration portion of the project was very successful. The proper planning, staging of equipment and activity sequencing of the construction/remediation phases minimized damage to the wetlands and were key elements to the success of this project. The savings associated with minimizing the damage of surrounding wetlands allowed optimization of clean up activities.

At Site 1, a former landfill, SVOCs were found in groundwater. Natural attenuation is being used to remediate the contamination and based on LTO efforts it will be complete in early FY01.

REGULATORY ISSUES

LEGAL AGREEMENTS - NRS is not on the NPL. There are no cleanup efforts required under RCRA.

PARTNERING - While there is no formal partnering agreement, the BRAC Cleanup Team (BCT) uses partnering principles.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY88. The TRC was converted to a Restoration Advisory Board (RAB) in August 1994. The eight member RAB meets quarterly and includes representatives from the Navy, Virginia Department of Environmental Quality, EPA Region III, and the community .

COMMUNITY RELATIONS PLAN - The Community Relations Plan (CRP) was completed in FY92.

INFORMATION REPOSITORY - An Administrative Record (the official file) was established in FY92. A copy of the Administrative Record documents are contained in the Information Repository. The Information Repository is located in the Morgan Memorial Library on 443 W. Washington St., Suffolk Va.

BASE REALIGNMENT AND CLOSURE

BRAC - In 1993, the Base Realignment and Closure (BRAC) Commission recommended complete closure of Driver NRS. The facility was closed in March 1994. It's mission of radio transmitting was ended and not moved to another location. When operations ceased, the Naval Facilities Engineering Command Atlantic Division assumed caretaker status.

BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) was formed in January 1994 and consists of members from the State of Virginia, EPA Region III, and Navy. The BCT meets monthly and has empowered working level managers to improve the decision making process. The BCT also implemented cost saving sampling programs. One of many examples of these programs included common contaminant field screening of other sites during the remediation process so that these sites could be added as modifications to an on-going remediation. These pre-remedial risk assessment based removal actions reduced risks and resulted in NFRAP decisions without the execution of an RI/FS, design, and contract development.

DOCUMENTS - An Environmental Baseline Survey (EBS) was completed in January 1994. Additional information was discovered to cause the EBS to be amended with an additional survey in February 1995. The 1994 EBS identified 557 acres of the 597 acres as CERFA clean. The property was divided into five parcels. Miscellaneous sampling and building sampling were done in November 1994. A final "close-out" BRAC Cleanup Plan is being prepared, and the Final EBS was completed in November 1996.

DRIVER NAVRADSTA
RELEVANT ISSUES

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
557 acres	19 acres	11 acres	10 acres	0 acres	0 acres	0 acres

LEASE/TRANSFER - A Finding of Suitability to Transfer (FOST) document is being prepared will be forwarded to the Naval Facilities Engineering Command Atlantic Division in anticipation of property transfer in January 1997.

REUSE - Funding for the Reuse Plan was received by the City of Suffolk from the Office of Economic Adjustment in December 1994. The plan, completed in March 1996, includes details for recreational use, with a small portion being used by the U.S. Fish and Wildlife Service and a local university.

FAST TRACK INITIATIVES - Some fast track initiatives in use at NRS include boilerplate RODs, concurrent reviews, presumptive remedies, removal actions, and field screening techniques. Use of new field screening equipment improved site characterization at Sites 2 and 5. Fast track initiatives center around sampling to confirm limits of contamination, then proceeding directly to removal actions, using Remedial Action Contracts. This minimizes design time and cost.

HISTORICAL PROGRESS

FY84

Sites 1-8 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA) identified eight potentially contaminated sites. Sites 1, 5 and 8 were recommended for further study. Sites 2-4 and 6-7 were not recommended for further study.

FY85 - FY86

A Confirmation Study was in the developmental and implementation stage during this time period.

FY87

Sites 1, 5 and 8 - A Confirmation Study, equivalent to a Site Inspection (SI) was completed.

FY88

Review of the IAS and CS were in process.

FY89 - FY91

The RI/FS investigation and study for Sites 1, 5 and 8 were being developed and implemented during this time period.

FY92

Sites 1, 5 and 8 - Draft RI/FS reports were completed.

FY93

Site 5 - Completed an Interim Removal Action to remove PCB contaminated soil.

FY94

Site 5 - Completed RI/FS. Signed ROD and initiated RD.
Site 8 - Completed a Removal Action to remove contaminated soil.
Site 9 - This disposal area was discovered from the historical aerial photographs.
Sites 10 and 11 - Site 10, a disposal area, and Site 11, a landfill, were discovered from historical aerial photographs and interviews of previous employed workers.

FY95

Sites 2, 3, 5 and 8 - The SI was completed; no further response action planned.
Site 5 - The RD was completed and the RA was initiated. PCB-contaminated soil was removed and disposed of in a RCRA-approved landfill.
Site 7 - Completed an Interim Removal Action. Action consisted of a soil cover of creosote-contaminated soil.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - The RI/FS was completed . A minor RD was initiated and then canceled for this site in FY96 since the remedial action is based on natural attenuation of groundwater contamination. RD is complete. LTM was initiated.

Site 1 - The ROD was completed.
Sites 5 and 7 - Completed Remedial Actions. The Multi-site LTEMP for hydraulic and ecological monitoring commenced.
Sites 5 and 7 - IRAs were completed to remove contaminated soils at Site 5 and install a soil cover at Site 7.
Sites 4, 6, 7, 9, 10 and 11 - Completed PA/SI.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Complete Environmental Baseline Survey (November 1996).
Site 1 - Long term monitoring will continue.
The "close-out" BCP and FOST documents will be complete.

FY98

Site 1 - Long term monitoring will continue.

DRIVER NAVRADSTA
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	5	6						
RI / FS	2	1						
RD	2	1						
RAC	1	2						
RAO							1	
IRA	2(2)	2(2)						
RC	3	7					1	
Cumulative % RC	27%	91%	91%	91%	91%	91%	100%	100%

Little Creek Naval Amphibious Base
Little Creek, Virginia

Engineering Field Division/Activity: LANTDIV
Major Claimant: CINCLANTFLT
Size: 2,147 Acres
Funding to Date: $9,936,000
Estimated Funding to Complete: $20,807,000

Base Mission: Provides amphibious warfare support; on-base logistics facilities and related support facilities

Contaminants: Heavy metals, PCBs, pesticides, POLs, volatile organic compounds

Number of Sites:
- **CERCLA:** 23
- **RCRA Corrective Action:** 0
- **RCRA UST:** 13
- **Total Sites:** 36

Relative Risk Ranking of Sites:
- **High:** 13
- **Medium:** 3
- **Low:** 0
- **Not Evaluated:** 0
- **Not Required:** 20

Sites Response Complete: 19

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	16				4	2		1
RI / FS		5	1			4	2	1
RD	1		1	3		4	2	1
RAC	1	1		1	3		2	5
RAO								9
IRA	1(1)	2(2)						
RC	9	3		1				10
Cumulative % RC	39%	52%	52%	57%	57%	57%	57%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	13							
CAP	6	2						
DES		5	1					
IMP	1	1	3	2				
IMO				1			1	3
IRA	1(1)	1(1)		1(1)				4(4)
RC	7			2				4
Cumulative % RC	54%	54%	54%	69%	69%	69%	69%	100%

NORFOLK NAVAL BASE
NORFOLK, VIRGINIA

Engineering Field Division/Activity: LANTDIV

Major Claimant: CINCLANTFLT

Size: 4,631 Acres

Funding to Date: $60,295,000

Estimated Funding to Complete: $39,156,000

Base Mission: Principal operating base of U.S. Atlantic fleet; headquarters; docks; Fleet and Industrial Supply Center, Naval Aviation Depot, Naval Air Station, Naval Station and Public Works Center

Contaminants: Acids, asbestos, ash, low-level radiation, paint, pesticides, POLs, PCBs, propellant, solvents, heavy metals

Number of Sites:	
CERCLA:	25
RCRA Corrective Action:	11
RCRA UST:	21
Total Sites:	57

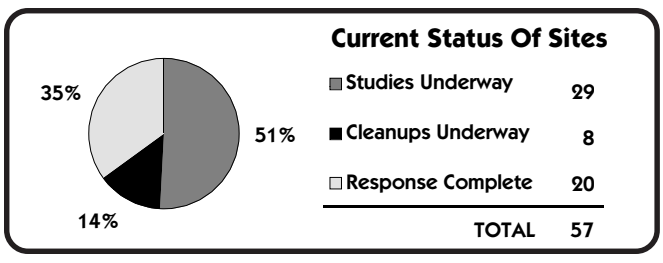
Relative Risk Ranking of Sites:			
High:	10	Not Evaluated:	1
Medium:	15	Not Required:	23
Low:	8		

Sites Response Complete: 20

EXECUTIVE SUMMARY

Norfolk Naval Base, also known as the Sewells Point Naval Complex (SPNC), is located in the city of Norfolk, Virginia. The northern boundary of the base is Willoughby Bay. The western boundary of the base is the Elizabeth River. The City of Norfolk borders the installation to the south and east, with a portion of the eastern boundary formed by Mason Creek. Typical operations undertaken to support the mission of Norfolk Naval Base are aircraft maintenance and repair, vehicle maintenance, grounds maintenance, training, fuel operations, storage of ordnance, waste disposal, paint stripping, sand blasting, and port operations. Industrial and maintenance facilities, storage and refurbishing yards, drydocks, piers, administrative areas, and housing areas cover most of the installation. Wastes generated at the facility include petroleum products, the chemical additive PCB, solvents, metals, sludges, acids, paints, asbestos, and pesticides. Site types included in the Installation Restoration Program include landfills, storage areas, shops, disposal areas, training areas, fuel spill areas, and Underground Storage Tanks (USTs). The facility was listed on the National Priorities List (NPL) in late 1996 based on a Hazard Ranking System (HRS) score of 50.00. The potential threat to humans, wetlands, and the ecosystem through surface water migration of contaminants caused the facility to be listed on the NPL. A Federal Facilities Agreement will be negotiated between the Navy and EPA Region III and is expected to be signed in FY 97.

Norfolk Naval Base lies on a low peninsula in the Hampton Roads Region of Virginia. Much of what is now Norfolk Naval Base was once tidal marsh or shallow waterway which has been filled with dredge spoil. Land use surrounding the area is diverse. Areas to the south along the waterfront are predominantly industrial and commercial. The areas to the south and east are residential. There is a heavy concentration of military installations within a 25-mile radius of Norfolk Naval Base. The maritime climate affords long temperate summers and mild winters. The base is underlain with sandy sediments. A thin, shallow water table aquifer flows slowly due to level topography and low to moderate permeability of sediments. This water is used for lawn watering in nearby residential areas with the City of Norfolk water system as the primary drinking water source for businesses and residents alike. A lower, confined aquifer, the Yorktown Formation, is used in the area near the base for an industrial water supply. Stormwater runoff from the highly developed portion of base is collected by a network of inlets to underground culverts including the very large Bousch Creek Culvert located beneath the base which discharges to Willoughby Bay. Other surface waters are conveyed to Mason Creek and then Willoughby Bay. Some portions of runoff of the western pier areas flows to the Elizabeth River. The habitat which originally covered the base has been disturbed by development. The majority of the coastline has been altered by dredge and fill operations and the construction of seawalls and docking facilities.



The potential for contaminant migration by both surface and subsurface pathways exists at Norfolk. Potential receptors for migrating contaminants would be primarily through surface water contact. Any contaminants present at the surface could also migrate off the facility to the Elizabeth River and Willoughby Bay via surface pathways such as the storm sewer system, drainage ditches, and Mason Creek. Past discharge of industrial wastewaters from the base may have contributed to metals contamination of Willoughby Bay. It is virtually impossible to determine the extent to which the base activities contributed to the degradation of surface waters in the area because of the numerous other sources of contamination that exist.

A Technical Review Committee (TRC) was formed in November 1988 and was converted to a Restoration Advisory Board in September 1994. A Community Relations Plan was published in FY93. Several Information Repositories have been established at local libraries. Two of the Information Repositories are local City of Norfolk libraries just outside the base and one is the base library located within the base. The Administrative Record File was re-established in December 1992 at the City of Norfolk Main Library and at the base environmental office.
At the end of FY96, 29 sites were in the study phase, 8 sites were in the cleanup phase, and 20 sites were Response Complete.
Using the DoD Relative Risk Site Evaluation Model 12 High Risk sites were identified. Several of these sites will be re-evaluated when data from additional studies is final completed

NORFOLK COMNAVBASE RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The soils at Norfolk Naval Base consist of fine sands and silts underlain by relatively impermeable sediments consisting of silt, clay, and sandy clay. Depth to groundwater is generally less than six feet. The upper layer comprises a shallow water table aquifer. The lower layer of sediments overlies a deep confined aquifer known as the Yorktown Formation. This aquifer is generally isolated from the water table aquifer. Public drinking water for the city of Norfolk is provided by the city's municipal surface water supplies. Naval Base surface waters are Mason Creek and the remnants of Boush Creek. Boush Creek was a channel that was completely filled and replaced by a network of drainage ditches during the development of the base. Stormwater runoff eventually drains to Mason Creek, Willoughby Bay, or the Elizabeth River. Water quality in the area reflects the stressed environmental conditions caused by numerous industries, local sewage, commercial run-off, and agriculture.

NATURAL RESOURCES - There are small, undeveloped wooded areas located throughout the base. These areas provide some habitat for small animals such as rabbits, rodents, squirrels, and stray dogs and cats. Cormorants, gulls, and terns are present along the shore. Important commercial and recreational species of fish are present all year round in the waters surrounding NAVBASE. Wetland areas have been virtually eliminated by past dredge and fill operations. What little wetland area is left supports blackbirds, marshwrens, and sparrows. There are no threatened or endangered species expected on Norfolk Naval Base. Several fisheries within 15 miles of Norfolk Naval Base have been closed to shellfishing because of high levels of shipping activities, nonpoint source pollution, and high fecal coliform levels.

RISK - A Baseline/Ecological Risk Assessment using EPA guidelines was performed for the Camp Allen Landfill in FY 94, for the CD Landfill in 1995, and for the Q Area Drum Storage Yard in 1996. The results of the Camp Allen Landfill assessment indicated that there were no unacceptable risks due to any media for the current usage of the facility. The future usage of the facility were also analyzed including conservative assumptions such as building houses upon the landfill itself and the residents drinking the water out of the landfill. The future scenario indicated that some risk related to drinking the groundwater by residents. This assumption has lead to the construction of a treatment plant to begin operations in the near future.

The CD Landfill risk assessment indicates that there is no unacceptable risk for exposures to surface soils or groundwater. However, contamination found in the sediments will be remediated in the coming fiscal year.

The Q Area Drum Storage Yard assessment indicates that the surface soils pose no unacceptable risk to human health or the environment. The future scenario of groundwater usage indicates a potential threat to human health. This potential health threat will be addressed by the air sparging and vapor extraction of the groundwater upon completion of the treatment facility to begin construction this calendar year.

An ATSDR Public Health Assessment has not yet been scheduled.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Naval Base was officially listed on the National Priorities List (NPL) in late 1996 with a Hazard Ranking System (HRS) score of 50.00. EPA did not evaluate the groundwater, soil exposure or air pathways, but rather concentrated on the surface water pathway and the potential for contamination migration due to overland flow and flooding. Results of sampling and analysis from around the base are limited but it is likely that the waters and sediments surrounding the base have been degraded by discharge of industrial, commercial and domestic waste. Additional sampling of sediments and surface water is underway. However, because of the large number of discharges and the complexity of mixing and flow patterns, it is not possible to quantify what portion of the degradation is attributable to past or current base operations and what portion is attributable to other sources.

LEGAL AGREEMENTS - Naval Base, Norfolk has begun preliminary negotiations of a Federal Facilities Agreement (FFA). The work completed to date has been the technical evaluation of potential sites to be included in the FFA. On site evaluations and data review have included personnel from EPA Region III, Virginia Department of Environmental Quality (VDEQ), and Navy personnel.

PARTNERING - In November 1996, Naval Base, Norfolk, Atlantic Division of the Naval Facilities Engineering Command (LANTDIV), EPA Region III, VDEQ began a Variable Oversight Team Process. This Variable Oversight Process (Streamlined Oversight) while unique is consistent with partnering efforts at other Navy Installations. The time required for investigation, decision making, and clean-up actions has already been reduced for several known sites. The initial organizational meetings included the Community Co-Chair for the Restoration Advisory board.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in November 1988 which met once or twice annually. There were 9 members including the Navy, Virginia Department of Environmental Quality, United States Environmental Protection Agency, City of Norfolk Environmental Division, City of Norfolk Health Department, National Oceanic and Atmospheric Administration, United States Fish and Wildlife Service, and a single community member. The TRC was converted to a Restoration Advisory Board (RAB) in September 1994. The RAB has 8 community members and meets quarterly.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was published in May 1993. The Navy is planning an update to the CRP following the base being listed on the NPL. The update should include more recent community interviews to insure stakeholder concerns are being addressed.

INFORMATION REPOSITORY - Information Repositories were established in March 1992. The Information Repositories contain copies of current relevant information. The three information Repositories are located at the City of Norfolk Larchmont Public Library on Hampton Blvd. (across from LANTDIV environmental offices), City of Norfolk Mary Pretlow Public Library on Gramby St., and the Naval Station Library in bldg. C-9 on Naval Base, Norfolk. The Administrative Record (now available on CD ROM), the official file of documents is located at the Kirn Library, City of Norfolk's Main library and the Environmental Office of the Naval Base and the Environmental Office of the Naval Facility Engineering Command in Norfolk Virginia. Additional copies of the Administrative Record have been provided to EPA Region III and VDEQ.

NORFOLK COMNAVBASE HISTORICAL PROGRESS

FY83

Sites 1-18 - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA) identified 18 potentially contaminated sites. Sites 1-6 were recommended for further study.

FY84

Sites 1-5 - A Confirmation Study of five sites of the IAS was begun.
Site 1 - A Suitability Assessment of the Camp Allen Landfill for a Naval Brig Expansion was completed.

FY87

Site 6 - An Expanded Site Investigation of the CD Landfill was begun.

FY88

Sites - 1-5 - Interim Remedial Investigation Report published.
Site 20 - An Interim RI investigation was begun.

FY89

Site 4 - The RI/FS was begun.
Site 19 - The building V-60/V-90 complex was demolished and the debris was appropriately disposed of. This was an aircraft rework facility contaminated with asbestos, PCBs, petroleum products, and other mixed waste.

FY91

Site 1 - The RI/FS (under CLEAN) for the Camp Allen Landfill was begun.
Site 4 - The RD was completed.
Site 4 - The RA was begun.
Site 6 - The Expanded Site Investigation Report completed.
Site 20 - An Interim RI/FS Report was published.

FY92

Site 4 - The RA was completed.
Site 3 - The RD was completed.
Site 22 - A PA/SI for this site was begun.

FY93

Site 1 - The EE/CA for a Removal Action at area B of Camp Allen Landfill was begun.
Site 6 - The RI/FS (CLEAN) was begun.

FY94

Site 1 - The Final RI/FS was completed. The Decision Document was signed for the RA.
Site 1 - The RD was begun.
Site 1 - The RA was begun.
Site 1 - The Removal Action for area B was completed.
Site 3 - The RD was begun.
Site 20 - An RI/FS was begun.

FY95

Site 1 - The RD was completed.
Site 3 - Pilot Testing of selected remedy.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 1 - The RA (treatment facility) construction is still in progress.
Site 1 - Post RA Ecological monitoring initiated.
Sites 2, 5 and 22 - The RI/FS started.
Site 17 - The PA/SI was completed
Site 3 - The RD has been completed and the RA begun.
Sites 6 and 20 - The RI/FS was completed and the RD begun.
Site 21 - The PA and SI began.
SWMUs 1, 2 and 4 - The PA/SI was completed.
SWMUs 1, 4, 6 and 8 - The RI was begun.
USTs 35 and 64 - The CAP and IMP was completed for these two sites. They are considered Response Complete.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1 and 3 - The RA will be completed.
Site 3 - LTO/LTM will begin.
Sites 6 and 20 - The RD will be completed and the RA will begin.
Site 21 - The PA/SI will be completed.
Sites 1, 3 and 21 - The RI/FS will be completed.
SWMUs 1, 4 and 6 - The RD will be completed.
SWMUs 2 and 6 - The RI/FS will be completed.
USTs 2, 22 and 314 - The IMP will be completed.

FY98

SWMU 5 - The PA/SI will be completed.
Site 1 - LTO/LTM will begin.
Sites 2, 5, 13, 16, 18 and 22 - The RI/FS will be completed.
SWMU 4 - The RI/FS will be completed.
Site 22 - The RD will be completed.
Site 6 - The RA will be completed.
SWMUs 1, 4 and 6 - The RA will be completed.
Site 20 - LTO/LTM will begin.
Site 22 - The RI/FS and the RD will be complete.
Site 20 - The IRA will be completed.
SWMUs 1, 2, 4 and 6 - The IRA will be completed.
Sites 6 and 13 - Estimated to be Response Complete.
SWMU 1, 2, 4 and 6 - Estimated to be Response Complete.
UST 37 - The CAP will be completed. Site is estimated to be Response Complete.
USTs 413 and 200025 - The IMP phase will be completed.

NORFOLK COMNAVBASE
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	18	4	1	1				1
RI / FS	2	2	5	7	2			2
RD	3	1	5	1	1	1	1	2
RAC	3		2	4	1	2		4
RAO								2
IRA	4(4)			5(5)		2(2)	1(1)	4(5)
RC	6			6	1	2		10
Cumulative % RC	24%	24%	24%	48%	52%	60%	60%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA					1			9
RFI / CMS			2			1		5
DES			2				1	6
CMI				2				7
CMO								3
IRA				1(1)				8(8)
RC								11
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	20							
CAP	14	2		1				
DES	3							
IMP	2	2	3	2				
IMO	1					1		5
IRA	6(7)							5(9)
RC	12	2		1		1		5
Cumulative % RC	57%	67%	67%	71%	71%	76%	76%	100%

NORFOLK NAVAL SHIPYARD
PORTSMOUTH, VIRGINIA

Engineering Field Division/Activity: LANTDIV
Major Claimant: COMNAVSEASYSCOM
Size: 1,293 Acres
Funding to Date: $4,329,000
Estimated Funding to Complete: $33,197,000

Base Mission: Provides logistics support for ships and service craft; overhauls, repairs and outfits service craft and Navy vehicles; research, development, testing and evaluation of shipboard systems

Contaminants: Acetylene, acids, alkalines, cyanide, paint, POLs, sludge, solvents, volatile organic compounds

Number of Sites:

CERCLA:	19
RCRA Corrective Action:	0
RCRA UST:	7
Total Sites:	26

Relative Risk Ranking of Sites:

High:	7	Not Evaluated:	0
Medium:	1	Not Required:	18
Low:	0		

Sites Response Complete: 18

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	19							
RI / FS			2	5				
RD				1	5	1		
RAC						1	2	4
RAO								7
IRA				1(1)		1(1)		
RC	11						1	7
Cumulative % RC	58%	58%	58%	58%	58%	58%	63%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	6							
CAP	7							
DES								
IMP								
IMO								
IRA								
RC	7							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

Oceana Naval Air Station
Virginia Beach, Virginia

Engineering Field Division/Activity: LANTDIV
Major Claimant: CINCLANTFLT
Size: 6,000 Acres
Funding to Date: $12,754,000
Estimated Funding to Complete: $25,717,000

Base Mission: Maintains and operates facilities and provides services and materials to support Naval aviation as a master jet base

Contaminants: Asbestos, heavy metals, PCBs, pesticides, POLs, solvents, volatile organic compounds

Number of Sites:

CERCLA:	2
RCRA Corrective Action:	21
RCRA UST:	16
Total Sites:	39

Relative Risk Ranking of Sites:

High:	9	Not Evaluated:	0
Medium:	2	Not Required:	26
Low:	2		

Sites Response Complete: 22

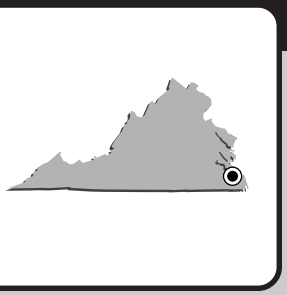
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS	2							
RD	1							
RAC	1							
RAO								1
IRA	1(1)							
RC	1							1
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	21							
RFI / CMS	12	4	1	3				
DES	4	2	3					
CMI	4							
CMO								4
IRA	5(5)		1(1)					
RC	13		2	2				4
Cumulative % RC	62%	62%	71%	81%	81%	81%	81%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	15							
CAP	15							
DES	6	3						
IMP		4	4					
IMO			1					7
IRA								7(8)
RC	8							8
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%

PORTSMOUTH NAVAL MEDICAL COMMAND
PORTSMOUTH, VIRGINIA



Engineering Field Division/Activity: LANTDIV
Major Claimant: BUMED
Size: 109 Acres
Funding to Date: $100,000
Estimated Funding to Complete: $70,000

Base Mission: Provides general and clinical hospitalization services for active duty Navy and Marine Corps personnel

Contaminants: PCBs, ash, asbestos

Number of Sites:

CERCLA:	2
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	2

Relative Risk Ranking of Sites:

High:	0	Not Evaluated:	0
Medium:	0	Not Required:	0
Low:	2		

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	2							
RI / FS								
RD								
RAC						1		
RAO								
IRA	1(2)		1(2)					
RC			1			1		
Cumulative % RC	0%	0%	50%	50%	50%	100%	100%	100%

Quantico Marine Corps Base
Quantico, Virginia

Engineering Field Division/Activity: EFACHES
Major Claimant: CMC
Size: 60,647 Acres
Funding to Date: $27,979,000
Estimated Funding to Complete: $88,939,000

Base Mission: Supports research, development, testing and evaluation of military hardware and military training

Contaminants: PCBs, pesticides, chlorinated solvents, phenols, heavy metals (chromium, lead), POLs

Number of Sites:	
CERCLA:	94
RCRA Corrective Action:	4
RCRA UST:	2
Total Sites:	100

Relative Risk Ranking of Sites:			
High:	22	Not Evaluated:	0
Medium:	73	Not Required:	5
Low:	0		

NPL

Sites Response Complete: 3

EXECUTIVE SUMMARY

The Quantico Marine Corps Combat Development Command (MCCDC) is located approximately 35 miles south of Washington, DC. Its east boundary is the Potomac River, its south boundary is Tank and Aquia Creeks. Past operations included aviation maintenance, fire fighter training pit, battery salvage, painting, transformer salvage, vehicle maintenance, pest control, small arms firing ranges, underground storage tanks, and general public works functions.

MCCDC was listed on the National Priorities List (NPL) on 30 June 1994 with a Hazard Ranking System score of 50.00. The primary reason was Site 4, an old landfill used to burn chemicals and the chemical additive PCB and dispose of the burned remnants. Additionally, numerous sites are contaminated with heavy metals and pesticides.

In general, the immediate groundwater and soil present an environmental risk, with the possibility of subsequent migration to wetlands, surface water and waterways. The greatest potential for contaminant migration is via surface water runoff or shallow groundwater flow, since part of the base sits on top of thin soil underlain by shallow, impermeable bedrock. The source of drinking water on the base and in the local communities is surface water. Any migration of contaminant into surface waters is of concern. The aquatic and wetland ecosystems could also be receptors of contaminants. Contamination of the Maryland aquifers is considered to be negligible because a large amount of dilution occurs between recharge and withdrawal zones.

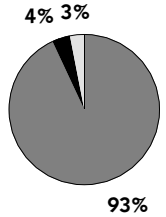
A Technical Review Committee (TRC) was formed in 1989 and meets quarterly on the base. A Restoration Advisory Board (RAB) has not been created because Marine Corps very unlikely because there has been minimal community interest in establishing one. MCCDC is currently performing additional community interviews to gauge community interest to determine whether a RAB is warranted. A Community Relations Plan (CRP) was completed in FY94. Two information repositories were established in FY92. A copy of the Administrative Record documents is contained in the Information Repository.

There are one hundred IR sites, 94 are CERCLA sites, 4 RCRA CA sites and 2 UST sites. Ninety-three sites are in a study phase. Four sites have cleanup underway, two in a removal action (site 4 and 18), two in CMI phase (SWMU 26 and 29). Three sites are considered Response Complete (RC) as of FY95.

Interim Remedial Actions (IRAs) are underway at Site 4 (landfill capping) with expected completion in FY97. Final Remedial Actions (FRAs) are underway at SWMU 26 (landfill capping), with an expected completion in FY97.

Major improvements on the base are underway due to use of the Navy's CLEAN and RAC contracts. SWMU 26, the Russell Road landfill, is being capped using ClayMax, a clay/fabric matting. By using ClayMax instead of a thicker clay layer, the landfill can be capped quicker and cheaper. A permeable barrier is being used as an interim measure at Site 4, the Old Landfill, to reduce risk and reduce costs.

MCCDC has 2 UST sites, UST 2 was RC'd in FY95 at the CAP phase. Since the site was RC's at the CAP phase, initiated design was terminated since it was not needed. UST 1 design was completed FY96. An IRA for UST 1 is scheduled for completion in FY97, as well as Response Complete.



Current Status Of Sites

Studies Underway	93
Cleanups Underway	4
Response Complete	3
TOTAL	100

QUANTICO MCCDC RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - MCCDC is bounded on the east by the Potomac River and on the south by the Tank and Aquia Creeks. The annual average rainfall is 39 inches; August has the highest monthly average of 4.8 inches. Surface runoff is greatest in the spring. MCCDC has an abundant supply of surface waters (four major ponds and four reservoirs) with numerous associated drainage systems that eventually empty into the Potomac River. The base is situated astride two geomorphic provinces. One formation favors contaminant migration along surface water pathways. The other favors percolation of contaminants into the groundwater flow system. This path can impact groundwater users just east of the Potomac River. However, because of an exceptional amount of dilution between the recharge and withdraw zones, contaminants originating at MCCDC are expected to have negligible impact on the Maryland aquifers. Shallow groundwater flow adjacent to major drainage streams can discharge into the marshlands and estuaries along the Potomac.

NATURAL RESOURCES - About 80% of MCCDC are woodlands and these areas are used for training, recreation and timber production. Diverse wildlife can be found, including deer, turkeys, quail, fox, beaver, otter, mink and muskrat. Eight ponds and lakes create over 800 acres of aquatic ecosystems. The base includes over 500 acres of wetlands along the Chopawamsic Creek and Potomac River. In addition, there are four miles of managed trout streams, 12 miles of tidal shoreline and 445 acres of tidal water. Fresh water surface bodies support bass, trout, blue gill and catfish. Bald eagles have nested on the base and are the only endangered or threatened species listed.

RISK - Twenty-two sites are ranked "High" relative risk in the DOD Relative Risk Ranking system. Two CERCLA sites are ranked high based on groundwater concerns. Surface runoff and groundwater contamination, including pesticides, can migrate into nearby wells, surface water and streams. Five CERCLA sites are ranked high based on soil contamination. Soil contamination includes the chemical additive PCBs, solvents, herbicides, petroleum products and lead. Contaminants can migrate into nearby wells and streams. Two of four RCRA sites are ranked "High," based on groundwater and soil impacts. Ecological receptors include the water migration pathway for both surface water and groundwater. Two of two RCRA UST sites have been categorized as "High," based on groundwater concerns. Workers at six CERCLA sites could be exposed to the contaminants. Potential receptors include wells, streams and wetlands. The primary threat from the RCRA and RCRA UST sites are the wetlands and groundwater. No sites are ranked "Low" and 73 sites are ranked "Medium" relative risk.

RESTORATION PROJECTS - A removal action at Site 4 is implementing a barrier layer on the landfill to reduce infiltration and prevent direct exposure.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - MCCDC was proposed for the National Priorities list (NPL) on 10 May 1993 with a Hazard Ranking System (HRS) score of 50.00 and was listed on 31 May 1994. The NPL listing was primarily based on Site 4, Old Landfill used from 1920 - 1971. During this time, open burning was practiced. Estimates of deposited material include 10,000 gallons of paint, 6,000 gallons of paint thinner and industrial and residential wastes. The Defense Reutilization and Marketing Office deposited 120 gallons of the chemical additive PCB at the landfill from electrical transformer scrap operations. In addition, a rail tank car derailment in 1988 resulted in a release of 40,000 gallons of fuel oil #2; only 5,000 to 10,000 gallons were recovered. The landfill is located on the Potomac River.

LEGAL AGREEMENTS - A Federal Facilities Compliance Agreement was signed 8 November 1991. Negotiations for a Federal Facilities Agreement have been on hold because of disagreements between the Navy and EPA on the wording of model language to be incorporated into the agreement.

PARTNERING - Engineering Field Activity Chesapeake and MCCDC are planning a partnership session with EPA Region III and the State of Virginia.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in FY89. The TRC meets quarterly on the base. Attendee backgrounds include professional, technical and business aspects. Four EPA and two State of Virginia representatives are members of the TRC Community members have been invited. Typically, meetings cover document reviews and discussions of alternative actions. Minutes of the meeting are available at three local libraries for public viewing. Fact sheets have been distributed. A Restoration Advisory Board (RAB) has not been established for MCCDC because there has been minimal community concern. MCCDC is currently re-evaluating whether or not to establish a RAB. Community Interviews are being conducted to determine whether sufficient community interest exists for support of a RAB.

COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was completed in FY94.

INFORMATION REPOSITORY - Two information repositories were established in FY92. A copy of the Administrative Record documents is contained in the Information Repository.

HISTORICAL PROGRESS

FY81

Site 18 - Completed Preliminary Assessment (PA).

FY82

Site 19 - Completed PA.

FY84

Sites 1-5, 8-12 and 14-17 - Completed PA.
Site 16 and Site 3 - Listed Response Complete (RC).
UST 1 - Completed Initial Site Characterization (ISC).
SWMUs 26-28 - Completed RCRA Facility Assessment (RFA).

FY85

Site 1 - The Remedial Investigation/Feasibility Study (RI/FS) is underway. Expected completion FY97.

FY88

Sites 1, 4, 5 and 17-19 - Completed Site Inspection (SI).
Sites 4, 5 and 17-19 - RI/FS started. Estimated completion date FY98.
SWMUs 2-25 - Completed PA.
SWMUs 26 and 28 - Completed RCRA Facility Investigation (RFI).
SWMU 28 - Started and completed IRA (in-situ soil treatment). Activity performed Long Term Monitoring (LTM).

QUANTICO MCCDC
HISTORICAL PROGRESS

FY89

SWMU 29 - Completed RFA.

FY90

Site 4 - Completed IRA.
SWMU 29 - Completed RFI. The Corrective Measures Study (CMS) is underway. Expected completion FY97.

FY91

Site 5 - IRA (waste removal - soil with the chemical additive PCBs) completed.
Site 20 - Completed PA.
SWMU 27 - Completed RFI.

FY93

Site 20 - Completed SI.
UST 1 - Completed Investigation (INV) phase. Started IRA (groundwater treatment - petroleum products). Expected completion FY97.

FY94

Sites 1 - Completed IRA (Incineration).
Site 20 - Completed IRA (Site access control measures and drainage controls).
UST 2 - Completed ISC and IRA (waste removal - drums, tanks, bulk containers, contaminated w/ petroleum products).
SWMU 26 - Completed CMS.

FY95

UST 1 - Completed Corrective Action Plan (CAP) and the Design (DES) of the corrective measure is underway. Expected completion FY96.
UST 2 - CAP underway and completion expected.
SWMU 26 - Started FRA (capping of landfill with inert material, paint, solvent, unknown). Expected completion FY97. CMI underway. Completion expected FY96.
SWMUs 26-28 - Completed Design (DES).
SWMUs 27-28 - Completed Corrective Measures Inspection (CMI). Started and completed the Final Remedial Action (FRA) (waste removal - soil w/ acid and blasting grit). Remedy is in place, and Operation and Maintenance (O&M) is underway. Activity is performing LTO.

PROGRESS DURING FISCAL YEAR 1996

FY96

Sites 5, 17, 18, 19 and 20 - Prepared work plans for RI/FS at these sites.
SWMU 1 - Completed Corrective Measures Design.
Site 4 - Start IRA at Old Landfill along the Potomac (Capping - paint, petroleum products, the chemical additive PCBs, solvent). Completion expected FY97.
Site 18 - Start IRA at AERO Club.
SWMU 26 - Continued FRA (Capping) for Russell Road Landfill.
UST 1 - Design completed.

PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 1 and 4 - Complete RI/FS.
Site 4 - Complete IRA (Capping - paint, petroleum products, the chemical additive PCBs, solvent).
SWMU 26 - Complete FRA (Capping).
Site 18 - Start and complete IRA (waste removal - soils, w/ petroleum products and heavy metals).
SWMU 29 - Complete RFI and Initiate and complete Corrective Action at Charlie Demo.
Complete LTO for site 27
SWMU 27 and 29 - Response Complete planned
UST 1 - IRA planned for completion
UST 1 - Response Complete planned.

FY98

Sites 1, 4 and 5 - Complete PA/SI at these sites.
Sites 5, 17, 18, 19, 20 - Complete RI/FS at these sites.
Site 4 - Complete design and implement Remedial Action for final remediation of the site. Action will be primarily to address groundwater contamination at the site.
Site 18 - Response Complete planned.
SWMU 26 - Begin Long-Term Operations.
SWMUs 3, 7, 19 and 59 - Conduct screening investigations at sites.
SWMU 28 - CMO completion and Response Complete planned.

QUANTICO MCCDC
PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	9			3	4	1	3	73
RI / FS			2	5				61
RD				1	4	1		44
RAC					1	3	1	45
RAO								3
IRA	4(6)		2(2)		1(1)			
RC	2			1		3	1	87
Cumulative % RC	2%	2%	2%	3%	3%	6%	7%	100%

RCRA CA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
RFA	4							
RFI / CMS	1		1					
DES	2	1						
CMI	2		2					
CMO			1	1				1
IRA	2(3)		1(1)					
RC			2	1				1
Cumulative % RC	0%	0%	50%	75%	75%	75%	75%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2							
CAP	2							
DES		1						
IMP								
IMO								
IRA	1(1)		1(1)					
RC	1		1					
Cumulative % RC	50%	50%	100%	100%	100%	100%	100%	100%

St. Juliens Creek Annex
St. Juliens Creek, Virginia

Engineering Field Division/Activity: LANTDIV
Major Claimant: CINCLANTFLT
Size: 490 Acres
Funding to Date: $974,000
Estimated Funding to Complete: $9,628,000

Base Mission: Provides supplies, equipment and support services to fleet activities
Contaminants: Volatile And Semi-volatile Organic Compounds, pesticides, PCBs, metals

Number of Sites:
- **CERCLA:** 5
- **RCRA Corrective Action:** 0
- **RCRA UST:** 0
- **Total Sites:** 5

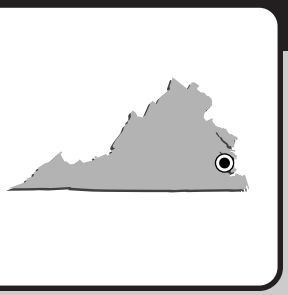
Relative Risk Ranking of Sites:
- **High:** 3
- **Medium:** 2
- **Low:** 0
- **Not Evaluated:** 0
- **Not Required:** 0

Sites Response Complete: 0

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI			1	3	1			
RI / FS					2		1	1
RD							3	1
RAC								4
RAO								4
IRA								4(4)
RC				1				4
Cumulative % RC	0%	0%	0%	20%	20%	20%	20%	100%

WILLIAMSBURG FLEET AND INDUSTRIAL SUPPLY CENTER, CHEATHAM ANNEX
WILLIAMSBURG, VIRGINIA



Engineering Field Division/Activity: LANTDIV

Major Claimant: COMNAVSUPSYSCOM

Size: 1,579 Acres

Funding to Date: $844,000

Estimated Funding to Complete: $7,079,000

Base Mission: Receiving, storing, packaging and shipping of materials to federal facilities on the East Coast and major distribution centers in Europe

Contaminants: Scrap metal, paint, POLs, PCBs, solvents, refuse

Number of Sites:

CERCLA:	12
RCRA Corrective Action:	0
RCRA UST:	0
Total Sites:	12

Relative Risk Ranking of Sites:

High:	0	**Not Evaluated:**	0
Medium:	1	**Not Required:**	9
Low:	2		

Sites Response Complete: 9

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	10		2					
RI / FS	1					1		2
RD							1	2
RAC	1							3
RAO								3
IRA	1(1)							
RC	9							3
Cumulative % RC	75%	75%	75%	75%	75%	75%	75%	100%

YORKTOWN FLEET AND INDUSTRIAL SUPPLY CENTER FUELS DIVISION
YORKTOWN, VIRGINIA

Engineering Field Division/Activity: LANTDIV
Major Claimant: COMNAVSUPSYSCOM
Size: 110 Acres
Funding to Date: $8,077,000
Estimated Funding to Complete: $19,463,000

Base Mission: Transfers and stores fuel oils
Contaminants: POLs, POL sludge, refuse

Number of Sites:

CERCLA:	19
RCRA Corrective Action:	0
RCRA UST:	2
Total Sites:	21

Relative Risk Ranking of Sites:

High:	1	Not Evaluated:	0
Medium:	0	Not Required:	20
Low:	0		

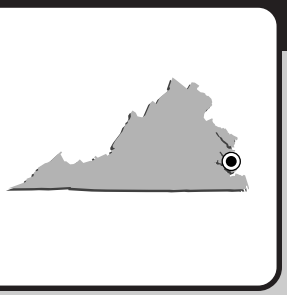
Sites Response Complete: 20

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	19							
RI / FS	1							
RD	1							
RAC	1							
RAO								
IRA	1(1)							
RC	19							
Cumulative % RC	100%	100%	100%	100%	100%	100%	100%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	2							
CAP	1		1					
DES			1					
IMP				1				
IMO								1
IRA								1(1)
RC	1							1
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%

YORKTOWN NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA



Engineering Field Division/Activity: LANTDIV
Major Claimant: COMNAVSEASYSCOM
Size: 10,624 Acres
Funding to Date: $19,279,000
Estimated Funding to Complete: $54,421,000

Base Mission: Provides ordnance maintenance, modifications, production, loading/off-loading and storage for Atlantic Fleet

Contaminants: Acids, asbestos, batteries, degreasers, explosives, heavy metals (cadium, lead, mercury, nickel), solvents, paint thinners, PCBs, varnishes, waste oil

Number of Sites:	
CERCLA:	44
RCRA Corrective Action:	0
RCRA UST:	4
Total Sites:	48

Relative Risk Ranking of Sites:

High:	28	Not Evaluated:	4
Medium:	4	Not Required:	10
Low:	2		

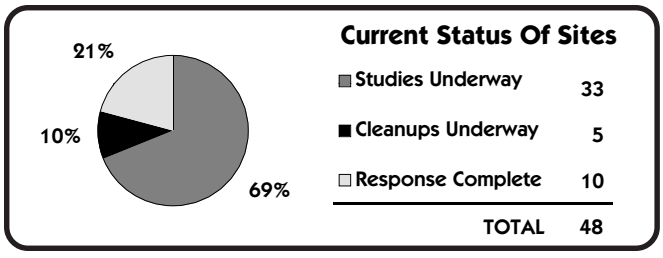
NPL

Sites Response Complete: 10

EXECUTIVE SUMMARY

Yorktown Naval Weapons Station (NWS) is a 10,624 acre facility located on the Virginia Peninsula. It is near the historic village of Williamsburg, Virginia and is 30 miles northwest of Norfolk, Virginia. The NWS lies within two drainage basins. The York River Basin to the north, and the James River Basin to the south. The primary mission of the NWS is to provide ordnance, technical support and related services to sustain the war fighting capabilities of the armed forces in support of national military strategies. This site was originally named the US Mine Depot, and was commissioned on July 1, 1918 to support the laying of mines in the North Sea during World War I. In 1992, this facility was placed on the National Priority List (NPL) because 19 sites were identified as past disposal or storage areas for materials that may contain hazardous substances. These contaminants include acids, asbestos, explosives, cadmium, lead, mercury, nickel, paint thinners, solvents, varnishes, waste oil and the chemical additive PCB. There is a possibility of groundwater contamination. Surface water runoff is also a concern because of drainage into surrounding wetlands. The NWS is under a Federal Facility Agreement (FFA) with the EPA which was signed in September 1994.

The proximity of the NWS to two major tidal tributaries of Chesapeake Bay is an important influence on the natural environment of the activity. The Virginia Peninsula enjoys a moderate continental climate with mild winters and long, warm summers. Rain is well distributed throughout the year, with the heaviest rains occurring in July and August. The NWS is characterized by gently rolling terrain dissected by ravines and stream valleys. Most of the area slopes toward the York River to the north, with a few southern sections draining toward the James River. Because of the proximity of the rivers, this area contains a significant amount of wetlands and the accompanying ecosystems. Contaminant migration to both rivers, which are used for recreation, fishing and wildlife habitat, is a concern to the community. Contaminants may migrate from disposal sites by means of surface runoff to the creeks and rivers, or by infiltration to the groundwater aquifers.



A Restoration Advisory Board (RAB) was initiated in October 1994. This board has representatives from the NWS, federal and state regulating agencies, National Oceanic and Atmospheric Administration, US Fish and Wildlife Service, US National Park Service, the Chesapeake Bay Foundation, the Virginia Institute of Marine Science, the County of York, various officials from surrounding communities, and nine community members. A Community Relations Plan was completed, and a number of educational materials were made available to the community.

Currently, remedial actions that include free product recovery are ongoing at two Underground Storage Tank (UST) sites. Completion of a Remedial Investigation/Feasibility Study (RI/FS) at Site 16 and Solid Waste Management Unit (SWMU) 16 led to the signing of a No Further Action (NFA) Record of Decision (ROD). The NWS also completed eight removal actions at the following eight sites: Site 2, Site 9, SWMU 1, SWMU 2, SWMU 4, SWMU 5, SWMU 17 and SWMU 18. These Remedial Actions (RA's) provided erosion and sediment controls which included silt fencing, water discharge channels, geotextile fabric for road base and temporary waste storage areas.

In the future, Site Inspections (SIs) which are underway at 12 SWMU's will be completed by FY98. Twelve RI/FS activities, which are currently underway, will be completed by FY00. The NWS plans to begin SIs at eight sites by FY00, and begin RI/FS activities at ten sites by FY01. There are also plans to begin Remedial Designs (RDs) for 23 sites proceeding to the RA phase between FY98 and FY05.

The NWS used an innovative process to determine if samples of composite carbon zinc battery waste was hazardous. The test results reviewed by the Virginia Department of Environmental Quality determined the waste was not hazardous, thus saving over one million in disposal costs. In FY94, the installation completed a comprehensive Site Management Plan (SMP). This plan, together with frequent teleconferences between the installation and regulatory agencies have facilitated decision making and helped to accelerate the cleanup schedule.

YORKTOWN NWS
RELEVANT ISSUES

ENVIRONMENTAL RISK

HYDROGEOLOGY - The NWS is located on the Virginia Peninsula. It is bounded by the York River to the north, and the James River to the south. Essentially, this area is a large drainage basin. Surface and groundwater of the NWS and its surroundings constitute an important resource. Surface waters from the station flow through many wetlands to the York and James Rivers. Drainage of the facility is accomplished by means of storm sewers and natural drainage systems. Extensive wetlands are found on all of the creeks which drain the station, and also in some shoreline areas of the York River. The creeks are hydraulically connected to the uppermost groundwater system. The tidal reaches of the York River, including the vicinity of the NWS are classified as shellfish waters. The mouth of the York River off the NWS is also an important shipping channel. The York River poses the major flooding threat to the facility during hurricanes or severe northeast storms.

In the shallow aquifer system of York County, the Columbia aquifer and the Cornwallis Cave aquifer can be differentiated based on the presence of absence of artesian conditions. The shallow lithology at Yorktown consists of upper sand, a claysilt unit, basal gravel/shell, and sediment of the Pleistocene and Pliocane ages. Deposits range in thickness from 20 feet at the western end of the peninsula to approximately 150 feet at the seaward and in the vicinity of WPNSTA Yorktown. The sand and gravel/shell units are both water-bearing and are commonly separated by the clay-silt layer, which may function as a confining or semiconfining unit. Collectively, these units form the shallow aquifer system at WPNSTA Yorktown, and correspond to the Columbia aquifer, Cornwallis Cave aquifer, and the Cornwallis Cave confining unit, respectively.

In many locations, the Columbia unit is not saturated. This is because either the Cornwallis Cave confining unit is “leaky” (e.g., transmits water readily) or the confining unit is missing, where creeks and tributaries have eroded through the unit. This occurs at many locations throughout the vicinity of WPNSTA Yorktown.

The Columbia aquifer is recharged directly by precipitation. The Cornwallis Cave aquifer is recharged by infiltration from leakage through the clay-silt unit. Some exchange also takes place between surface water in the creeks and ponds and in the east-northeast toward the York River, but locally trends toward groundwater discharge zones and appears to coincide with surface streams. The top of the water table generally reflects the topography.

Data from monitoring wells installed throughout WPNSTA Yorktown as part of the Confirmation and RI Studies were used to assess the depth to groundwater within the York County shallow aquifer system. The groundwater levels for the summer of 1994 indicated depths generally less than 30 feet below ground surface (bgs) throughout the upland areas of WPNSTA Yorktown. At areas of WPNSTA Yorktown that are located close to surface water bodies, the depth to the groundwater was frequently less than five feet bgs. The groundwater flow direction within the shallow system is generally toward groundwater discharge zones coincident with surface drainage’s and streams. Therefore, the water level elevations roughly reflect the surface topography. Groundwater levels have been measured at WPNSTA Yorktown during various time of the year. The general flow direction at the various sites has remained consistent during this time period.

The dominant source of domestic water supply for WPNSTA Yorktown and the surrounding community is from surface water reservoirs by the City of Newport News. However, individual homes also may obtain water from the shallow aquifer system (mainly the Yorktown-Eastover Aquifer) in portions of Charles City, New Kent, James City, and York Counties. The shallow aquifer system is comprised of the Columbia, Cornwallis Cave and Yorktown-Eastover Aquifers and associated confining units. Potable water sources from the Shallow-Aquifer System are drawn from the Columbia and Yorktown-Eastover Aquifers. The Cornwallis Cave Aquifer is not used as a potable water source due to its limited yields.

There are no drinking water wells at WPNSTA Yorktown; the coastal plain aquifer and other shallower aquifers are not used as a drinking water source. There are, however, five supply wells at WPNSTA Yorktown, located at Buildings 120, 352, 304, 28 and Gate 13. Due to the poor water quality, three wells, at Buildings 120, 352 and 304, have been decommissioned and capped; a fourth well at Building 28 was abandoned and filled with cement. The remaining well at Gate 13 is a newer well that supplies water to the toilet facilities which are part of the weigh station. Gate 13 is located at the western boundary of the Station, approximately 3.8 miles from Site 16. Bottled drinking water is supplied to the weigh station.

NATURAL RESOURCES - About 78% of the NWS is undeveloped, and predominantly wooded. Marshes comprise approximately 400 acres, while lakes account for 150 acres. The diversity of ecosystems within the station and its surroundings provide habitat for a wide variety of plants and animals. Vegetation includes loblolly and Virginia pines, Virginia creeper, briars and honeysuckle. Ferns are also found in many moist, shaded areas. Since the entire facility is fenced in, the wildlife exists in a carefully managed environment. The white-tail deer population, as well as wild turkey, quail, squirrel, rabbit, raccoon and possum populations are managed by the facility’s natural resource personnel to prevent overpopulation and food shortages. The creeks and their associated wetlands are important as fish nursery areas. Oysters, blue crabs and hard and soft shell clams are found in the York River off-shore the NWS. This area is designated as a crab pot fishery. No Federal or State designated plant or animal species on the endangered or threatened list exist on the facility or nearby.

RISK - The NWS has 48 total sites for cleanup. Out of those, 28 are classified as High Relative Risk. These sites are classified this way primarily due to soil contamination which has migrated to the groundwater.

REGULATORY ISSUES

NATIONAL PRIORITIES LIST - Six sites identified in 1992 led to the placement of the NWS on the National Priority List (NPL) on 14 October 1992. All six of these sites are hydrologically connected to Chesapeake Bay.

LEGAL AGREEMENTS - The NWS is under a Federal Facility Agreement (FFA) with the EPA which was signed in September 1994. A Site Management Plan (SMP) was completed in 1994 and has helped to accelerate the cleanup schedule. The SMP is revised each year to reflect current schedules.

PARTNERING - The NWS initiated a joint program with the US Army Corps of Engineers Waterways Experiment Station in Vicksburg, Mississippi. Under this program, the Navy and the Waterways Experiment Station are conducting a treatability study for explosive-contaminated soils using two different bioremediation technologies.

COMMUNITY INVOLVEMENT

RESTORATION ADVISORY BOARD - A Restoration Advisory Board (RAB) was initiated in October 1994. This board has representatives from the NWS, federal and state regulating agencies, National Oceanic and Atmospheric Administration, US Fish and Wildlife Service, US National Park Service, the Chesapeake Bay Foundation, the Virginia Institute of Marine Science, the County of York, various officials from surrounding communities and nine community members. The board meets on a quarterly basis.

YORKTOWN NWS
RELEVANT ISSUES

COMMUNITY RELATIONS PLAN - A Community Relations Plan was completed, and a number of educational materials were made available to the community.

INFORMATION REPOSITORY - The NWS maintains four repositories. One is located at the facility and the other three are at local libraries. A copy of the Administrative Record (the official file) is included in the Repository.

HISTORICAL PROGRESS

FY84

Sites 1-19 - An Initial Assessment Study (IAS), similar to a Preliminary Assessment (PA), was completed in July. A total of 19 potentially contaminated sites were identified. The IAS recommended 15 of the sites proceed to the Confirmation Study (CS).

FY86

Sites 1-9, 11, 12 and 16-19 - Field work for a CS, similar to a Site Inspection (SI), was started. Round 1 of sampling was completed in June 1986. Recommendations were made for a second round of sampling.

FY88

Sites 1-9, 11, 12 and 16-19 - Field work for the second round of CS sampling was completed in June 1988.

FY89

Sites 1-9, 11, 12 and 16-19 - The CS was completed for these sites. The CS was conducted in two rounds of sampling. Round 1 was completed in June 1986 and a second round of sampling was completed in June 1988. A draft report was prepared in February 1989.
Sites 10, 13, 14 and 15 - These sites were determined to require no further study and are considered Response Complete (RC).

FY91

Sites 1-9, 11, 12 and 16-19 - The Final CS report was released for these sites. This report summarized the findings of all previous studies for these sites and recommended that additional studies be conducted in a Remedial Investigation/Feasibility Study (RI/FS) phase.
Site 21 - This site was discovered in November 1990. It was a disposal area for batteries and drums. An SI was initiated to investigate the site.

FY92

Site 21 - The SI was completed and the site was recommended to proceed to the RI/FS phase.
Sites 1-9, 11, 12, 16-19 and 21 - Remedial Investigation (RI) Work Plans were completed for these sites and sent to the Technical Review Committee (TRC) for review in December 1991. The Work Plans were finalized in May 1992. RI field work started in April 1992. The RI included marine sampling of shellfish and fish in surface waters on the base.

SWMUs 1-21 - The EPA conducted two searches for potentially contaminated sites. First, the EPA Photographic Interpretation Center (EPIC) searched aerial photographs and found several potential sites. Second, the EPA conducted a RCRA Facility Assessment (RFA) as part of a RCRA Part B permit application evaluation, and identified 19 SWMUs. The SWMUs were recommended for further investigation in an SI.

FY93

Sites 1-9, 11, 12, 16-19 and 21 - The RI Report for the first round of RI sampling was completed in July. The majority of these sites moved into the Feasibility Study (FS) phase. Sites 6, 7 and 12 were recommended for a second round of RI sampling. Site 5 was recommended for no further study or action.
USTs 1-4 - The Initial Site Characterization (ISC) was completed.
USTs 1 and 2 - The Corrective Action Plan (CAP) was completed.

FY94

Site 2 - A removal action to remove debris and containers was started.
Site 4 - A removal action to remove old containers and other debris was completed.
Site 5 - The RI/FS was considered done and the site was considered RC.
Sites 16 and 21 - Removal actions were conducted to remove wastes and containers from the site.
SWMU 16 - The SI phase was completed.
USTs 3 and 4 - The CAP was completed and these two UST sites were recommended for no further study or action and were marked RC.

FY95

Sites 1-4, 6-9, 11, 12, 16-19, 21 and 22 - The RI/FS was still underway. Site 16 and SWMU 16 required No Further Action (NFA) after the removal action in 1994 and was marked RC.
Site 2 - The removal action started in FY94 was completed.
Site 9 - A removal action was completed to remove old containers and other debris from the site.
Site 16/SSA16 - The RI and Removal Action were completed. The ROD was signed September 1995 and specified no further action was required.
SWMUs 1, 6 and 7 - The SI phase was completed.
SWMUs 1, 2, 4, 5, 17 and 18 - Removal Actions were completed.
USTs 1 and 2 - The Implementation of Corrective Measures began and was completed for both sites. The Corrective Measures included free product removal and groundwater treatment.

PROGRESS DURING FISCAL YEAR 1996

FY96

Site 12 - RI/FS was completed.
Site 12 - Remedial design was initiated.
Site 7 - Treatability study initiated to treat explosive contaminated soil.
Sites 2, 4, 8, 11, 17, 18, 21, 22 and SSA 14 - RI/FS studies initiated.
SWMUs 1, 2, 6, 7, 15 and 17-19 - The SI phase was completed. The final SSP reports were signed by all parties and recommended no further action for SWMUs 2,15,17, and 19. SWMUs 15 and 19 are now considered Response Complete. SWMUs 1,6,7,and 18 were recommended for an RI.

SWMU 7 - A Removal Action was completed to remove three fire training pits and associated soil contamination, an UST and associated piping, and numerous underwater ordnance items.
USTs 1 and 2 - The IMO was completed.

YORKTOWN NWS
PLANS FOR FISCAL YEARS 1997 AND 1998

FY97

Sites 6, 7, 9 and 19 - RI/FS planned for completion.
Sites 23-26 - RI/FS phase planned to be initiated.
Sites 9, 12 and 19 - RA planned to be initiated.
Sites 6, 7, 9, 12 and 19 - The RD will be completed
Site 7 - Field Scale Treatability Study for treating explosive contaminated soil planned to be completed.
Sites 7 and 19 - An IRA is planned for soil removal.
Bench Scale Treatability Study for the treatment of explosive contaminated soil will be completed.
SWMUs 8 and 11-14 - Complete the PA/SI
SWMUs 20 and 21 - Initiate the Site Screening Process Report.

FY98

SWMUs 3, 9, 20, 21, 22, 23 - The PA/SI will be completed
Sites 1, 2, 3, 4, 8, 11, 17, 18, 21 and 22 - The RI/FS will be completed. It is expected that Site 18 will require no further action and become Response Complete.
SWMU 14 - The RI/FS will be completed.
Site 4 - The RD will be completed.
Sites 9, 12 and 19 - The RA will be completed. Sites will be considered Response Complete.
Sites 19 and 19 - An Interim RA will be completed for bioremediation.
Sites 1, 2 and 3 - The RD will be initiated
Sites 6 and 7 - The RA will be initiated.

PROGRESS AND PLANS

CERCLA	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
PA / SI	20	8	5	6	3			1
RI / FS	3	1	4	11	4	4	4	6
RD	1		5	1	8	4	2	13
RAC	1			3	2	4	3	21
RAO								12
IRA	9(9)	1(1)	2(2)	2(2)	2(2)	4(4)	2(2)	16(23)
RC	6	2		4	1	4	2	25
Cumulative % RC	14%	18%	18%	27%	30%	39%	43%	100%

UST	FY95 and before	FY96	FY97	FY98	FY99	FY00	FY01	FY02 and After
SA	4							
CAP	4							
DES								
IMP	2							
IMO		2						
IRA								
RC	2							2
Cumulative % RC	50%	50%	50%	50%	50%	50%	50%	100%